

REMARKS

Claims 1-42 were pending in this application when the present Office Action was mailed (September 9, 2005). In this paper, claims 1, 14, 21, and 34-42 have been amended. No claims have been canceled. Accordingly, claims 1-42 are currently pending.

In the present Office Action, the Examiner alleged that the pending claims were only entitled to the filing date of this application. Applicant does not comment on or concede the merits of the Examiner's position regarding the claimed priority.

In the September 9 Office Action, all the pending claims were rejected. More specifically, the status of the application in light of this Office Action is as follows:

(A) The drawings stand objected to as allegedly failing to comply with 37 CFR 1.84(p)(5);

(B) Claims 1, 6-8, 14, 21, 26-28, and 35-39 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,736,952 to Emesh et al. ("Emesh") in view of U.S. Patent No. 3,239,439 to Helmke ("Helmke");

(C) Claims 2-4, 9-13, 15-20, 22-25, 29-34, and 40-42 stand rejected under 35 U.S.C. 103(a) over Emesh in view of Helmke, and further in view of U.S. Patent No. 5,911,619 to Uzoh et al. ("Uzoh"); and

(D) Claims 5 and 25 stand rejected under 35 U.S.C. 103(a) over Emesh in view of Helmke, further in view of Uzoh, and further in view of U.S. Patent No. 6,416,647 to Dordi et al. ("Dordi").

As a preliminary matter, the undersigned attorney wishes to thank the Examiner for engaging in a telephone interview on November 30, 2005. During the telephone interview, the Examiner and the applicant's representatives discussed the invention contained in this application and possible claim amendments for overcoming the cited references. The foregoing claim amendments and following remarks reflect the

foregoing discussion and expand upon the points discussed during the November 30 telephone interview.

A. Response to the Objection to Drawings

The drawings were objected to for allegedly failing to comply with 37 CFR 1.84(p)(5). Figure 3 has been amended to address the Examiner's concerns. Accordingly, the objection to the drawings should be withdrawn.

B. Response to the Section 103 Rejection – Emesh and Helmke

Claims 1, 6-8, 14, 21, 26-28, and 35-39 were rejected under 35 U.S.C. 103(a) as being unpatentable based on Emesh in view of Helmke. For the reasons discussed below, a *prima facie* case of obviousness over the combined teachings of Emesh and Helmke has not been made. Accordingly, the Section 103 rejections of claims 1, 6-8, 14, 21, 26-28, and 35-39 over Emesh in view of Helmke should be withdrawn.

Claim 1, as amended, is directed to an apparatus for electrochemical-mechanical processing of microelectronic workpieces. The apparatus includes a workpiece holder, a workpiece electrode, and first and second remote electrodes spaced apart from the workpiece holder. A mechanical medium is positioned with a bearing surface facing the workpiece holder and a backside facing the first and second remote electrodes. A switching assembly is coupled to the workpiece electrode, the first remote electrode, and the second remote electrode. The apparatus also includes an AC power supply electrically coupled to the switching assembly to be in electrical communication with the first and second remote electrodes via the switching assembly, and a DC power supply electrically coupled to the switching assembly to be in electrical communication with the workpiece electrode at one polarity and at least one of the first and second remote electrodes at an opposite polarity via the switching assembly.

Claim 1 has been amended to indicate that the AC power supply is switchably coupled to the first and second remote electrodes, and the DC power supply is switchably coupled to the workpiece electrode and at least one of the first and second remote electrodes via the switching assembly. Support for these features is included in

the specification as filed, for example, at paragraph 0016 on pages 6 and 7, paragraph 0017 on pages 7 and 8, and Figure 3 and 6. An apparatus with the features of amended claim 1 can be used to plate a metal onto the surface of the workpiece by applying a DC voltage between the workpiece electrode and at least one of the first and second electrodes and de-plating the conductive workpiece surface by applying an AC voltage between the first remote electrode and the second remote electrode, simultaneously or in sequence.

Emesh discloses an electrochemical planarization apparatus that selectively removes metal layers at high topography areas to achieve enhanced planarization (Emesh at Abstract and column 3, lines 21-27). The apparatus includes a conductive platen connected to a power source (Emesh at column 5, lines 21-24), and at least one electrode embedded in the conductive platen and connected to the power source. (Emesh at column 7, lines 42-50). The power source applies a negative charge to the platen and a positive charge to the embedded electrode (Emesh at column 7, lines 63-67). The platen may also be divided into "zones" and connected to different power sources for producing different electrical currents (Emesh at column 11, lines 21-25).

Helmke discloses an apparatus and method for plating various metals adherently onto molybdenum or tungsten (Helmke at column 1, lines 9-10). The apparatus includes a DC power supply and an AC power supply, which can be alternatively selected by a double pole/double throw switch (Helmke at column 1, lines 45-49). The apparatus also includes two electrodes (an anode and a cathode), to which the selected power is applied (Helmke at column 1, lines 42-43). The method disclosed in Helmke includes applying the DC power to the anode and cathode subsequent to applying the AC power to the two electrodes (Helmke at column 2, lines 1-25).

The combined teachings of Emesh and Helmke fail to teach or suggest each and every features of amended claim 1. Assuming for the sake of argument that the first and second "zones" and the embedded electrode of Emesh correspond at least in part to the first and second remote electrodes and the workpiece electrode of claim 1, respectively, Emesh does not teach or suggest that an AC power supply can be electrically connected to the first and second "zones". As described above, Emesh

discloses that each zone (i.e., the first zone or the second zone) and the embedded electrode can be coupled to the opposite poles of a power source to achieve a desired current flow. As such, a closed circuit can be formed with the power source, one of the zones, and the embedded electrode. Emesh, however, does not teach or suggest that the first zone and the second zone can be coupled to the opposite poles of a power source to form a closed circuit, i.e., a circuit containing the first zone, the second zone, and the power source.

If one were to combine the teachings of Emesh with those of Helmke, the resulting apparatus would have a first power source coupled to Emesh's first zone and the embedded electrode, and a second power source coupled to Emesh's second zone and the embedded electrode. Each power source would include both an AC and a DC source alternatively selectable with a switch, in accordance with Helmke's disclosure. The resulting apparatus would alternatively couple either the AC or the DC power source between a zone and the embedded electrode, but would not couple either the AC or the DC power source to the first zone and the second zone. In addition, neither Emesh nor Helmke provides any suggestion or motivation for such a modification. Accordingly, the combined teachings of Emesh and Helmke do not disclose "an AC power supply electrically coupled to the switching assembly to be in electrical communication with the first and second remote electrodes via the switching assembly", and "a DC power supply electrically coupled to the switching assembly to be in electrical communication with the workpiece electrode at one polarity and at least one of the first and second remote electrodes at an opposite polarity via the switching assembly." As a result, a *prima facie* case of obviousness has not been made, and the rejection to claim 1 should be withdrawn.

Claims 6-8 depend from claim 1. Accordingly, the Section 103 rejections of these claims should be withdrawn for the foregoing reasons discussed above and for the additional features of these dependent claims.

Claims 14 and 35-39 have been amended to contain subject matter generally similar to that of amended claim 1. As a result, the Section 103 rejections of claims 14, and 35-39 should be withdrawn.

Claim 21 has been amended to contain subject matter generally similar to that of amended claim 1. As a result, the Section 103 rejection of claim 21 should be withdrawn. Claims 26-28 depend from amended claim 21. Accordingly, the Section 103 rejections of claims 26-28 should be withdrawn for the reasons discussed above and for the additional features of these dependent claims.

C. Response to Section 103 Rejection – Emesh, Helmke, and Uzoh

Claims 2-4, 9-13, 15-20, 22-25, 29-34, and 40-42 were rejected under 35 U.S.C. 103(a) over Emesh in view of Helmke, and further in view of Uzoh. As discussed above, the combined teachings of Emesh and Helmke fail to teach or suggest all the features of amended claim 1, and Uzoh fails to fill the void. For example, Uzoh was cited in the Office Action for its disclosure of a workpiece carrier carrying the workpiece electrode; however, Uzoh does not disclose that an AC power supply can be electrically connected to the first and second remote electrodes. Claims 2-4 and 9-13 depend from amended claim 1. Accordingly, the Section 103 rejections of claims 2-4 and 9-13 should be withdrawn for the reasons discussed above and for the additional features of these dependent claims.

Claims 14 has been amended to contain subject matter generally similar to that of amended claim 1, and claims 15-20 depend from amended claim 14. Accordingly, the Section 103 rejections of claims 15-20 should be withdrawn for the reasons discussed above and for the additional features of these dependent claims.

Claim 21 has been amended to contain subject matter generally similar to that of amended claim 1. Claims 29-34 depend from amended claim 21. Accordingly, the Section 103 rejections of claims 29-34 should be withdrawn for the reasons discussed above and for the additional features of these dependent claims.

Claims 40-42 have been amended to contain subject matter generally similar to that of amended claim 1. Accordingly, the Section 103 rejections of claims 40-42 should be withdrawn for the foregoing reasons and for the additional features of these claims.

D. Response to Section 103 Rejection – Emesh, Helmke, Uzoh, and Dordi

Claims 5 and 25 were rejected under 35 U.S.C. 103(a) over Emesh in view of Helmke, further in view of Uzoh, and further in view of Dordi. As discussed above, the combined teachings of Emesh, Helmke, and Uzoh fail to teach or suggest all the features of amended claim 1, and Dordi fails to fill this void. For example, Dordi was cited in the Office Action for its disclosure of holding the workpiece such that its processing side is facing upwardly; however, Dordi does not disclose that an AC power supply can be electrically connected to the first and second remote electrodes. Claim 5 depends from amended claim 1. Accordingly, the Section 103 rejection of claim 5 should be withdrawn for the reasons discussed above and for the additional features of claim 5.

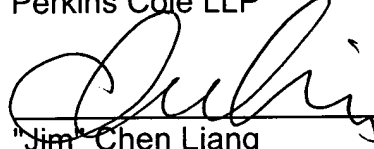
Claim 21 has been amended to contain subject matter generally similar to that of amended claim 1. Claim 25 depends from amended claim 21. Accordingly, the Section 103 rejection of claim 25 should be withdrawn for the reasons discussed above and for the additional features of claim 25.

E. Conclusion

In view of the foregoing the claims pending in this application patentably define over the applied references. A Notice of Allowance is, therefore, respectfully requested. If the Examiner has any questions or believes a telephone conference would expedite prosecution of this application, the Examiner is encouraged to call the undersigned representative at (206) 359-6038.

Respectfully submitted,

Perkins Coie LLP

A handwritten signature in black ink, appearing to read "Jim Chen Liang", is written over a horizontal line.

"Jim" Chen Liang

Registration No. 51,945

Date: 12/7/05

Correspondence Address:

Customer No. 25096

Perkins Coie LLP

P.O. Box 1247

Seattle, Washington 98111-1247

(206) 359-8000

Amendments to the Drawings:

Enclosed herewith is an amended version of Figure 3, in which Reference Numeral 112 has been deleted. In accordance with the Office's revised format, this drawing has been labeled "Replacement Sheet".